



## SHORT REPORT

# Persistent Sciatic Artery Associated with Arteriovenous Malformation of Lower Extremity in a Young Woman: A Case Report

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### KEYWORDS

Sciatic artery;  
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Embolization;  
Duplex scanning

**Abstract** Persistent sciatic artery (PSA) is a rare anatomical abnormality commonly diagnosed as a consequence of atherosclerotic or aneurysmal degeneration, but it is seldom detected in young people, particularly in association with arteriovenous pathology of lower extremity. **Case report:** A young woman presented with pain, edema and varicose veins. Diagnostic imaging (Duplex, MRA, CT scan and angiography) revealed a PSA with multiple branches establishing AV connections in pelvis and thigh. Subsequent coil embolization of the PSA was performed. **Results:** Pain relief and reduction of edema and varicose veins. Diagnostic imaging was decisive in detecting this abnormality.

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## Introduction

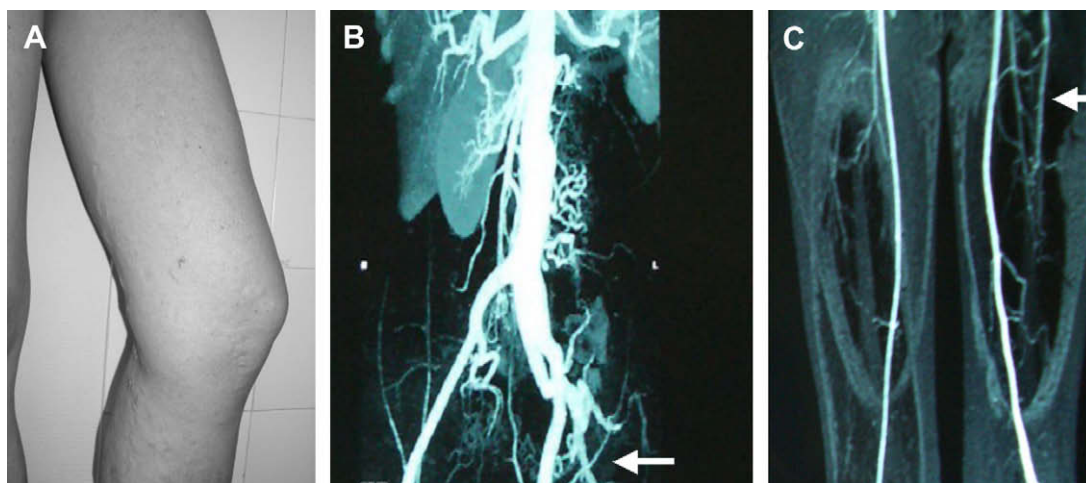
Persistent sciatic artery (PSA) is a rare vascular anomaly and results from failure of the axial artery to regress during early embryo development and continues to supply the lower extremity while the femoral artery remains in many cases underdeveloped. Thus, PSA may be classified as

complete or incomplete; in the complete type, the PSA is the main artery supplying the lower extremity and the superficial femoral artery remains hypoplastic, while in the incomplete type the femoral artery supplies the lower extremity and the PSA is hypoplastic.<sup>1</sup> An absent or weak femoral pulse with good popliteal and pedal pulses strongly suggests the presence of the complete form of PSA (Cowie's sign). It is seldom detected in young people and only a very few cases of PSA associated with venous pathology have been published in the literature. Diagnostic imaging is decisive in demonstrating this uncommon vascular abnormality.

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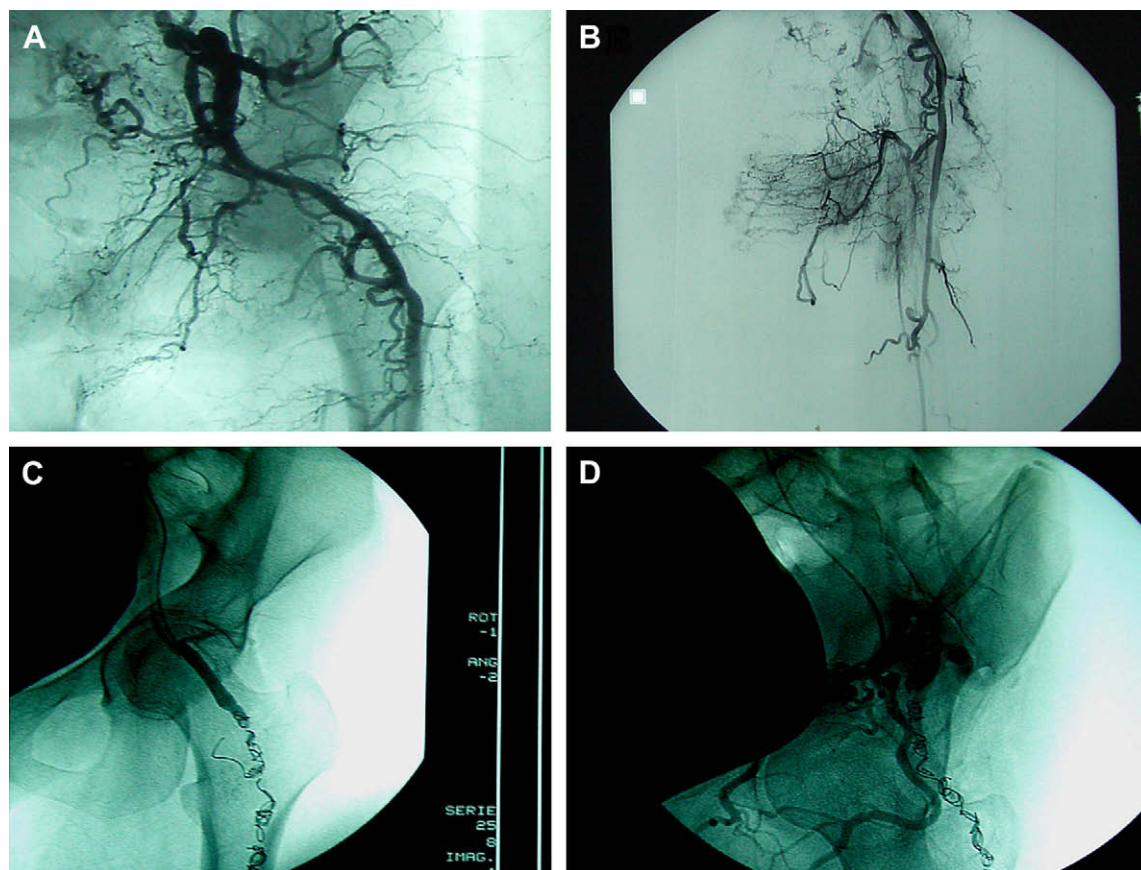


**Figure 1** A: Varicose veins; B and C: PSA (arrows).

## Case Report

We present a case of a 17-year-old woman with a 10 year history of progressive left lower extremity pain, edema and varicose veins. Her past medical history did not include remarkable events. Examination of her left lower extremity revealed edema and atypical varicose veins (Fig. 1A), but there was no difference in length between the two lower

limbs. Femoral, popliteal, and pedal pulses were palpable in both extremities. Duplex sonography revealed multiple low-flow arteriovenous fistulae in the extremity; the common and superficial femoral and popliteal arteries were patent; however, an atypical well-developed artery was also detected in the thigh far from the superficial femoral vessels. Subsequent magnetic resonance angiography (MRA) (Fig. 1B) demonstrated a large left common iliac artery and



**Figure 2** Selective angiography that shows the PSA (A); AV connections (B); embolization of the PSA (C); complete occlusion of the PSA (D).

a persistent sciatic artery (PSA) arising from the internal iliac artery that became hypoplastic in the distal third of the thigh (Fig. 1C). The superficial femoral artery was continuous to a somewhat dilated popliteal artery. An angiogram was performed via a contralateral femoral artery approach, selective catheterization of the internal iliac artery and PSA was achieved (Fig. 1A) and showed the PSA splitting into multiple branches that established AV connections in pelvis and thigh (Fig. 2B); since the blood supply to the extremity did not depend on the PSA (incomplete form), embolization of the PSA and its branches was decided; the embolization was performed using 500–700- $\mu$  microspheric particles (Boston Scientific, Wayne, ND, U.S.A.) and coils (Cook Inc., Bloomington, IN, U.S.A.) (Fig. 2C). RESULTS: a complete occlusion of the PSA was achieved (Fig. 2D) and the patient was uneventfully discharged from hospital with pain relief; at six-month follow-up there was remarkable reduction of edema and varicose veins. Currently, small varicose veins persist in the leg requiring compression stockings.

## Discussion

PSA is a rare congenital abnormality with an incidence ranging from 0.025% to 0.04% of the population<sup>2</sup> and is associated with atherosclerotic and/or aneurysmal changes. It results from failure of the axial artery to regress during early embryonic development and continues to supply the lower extremity, while the femoral artery remains in many cases underdeveloped. The most frequent complication is aneurysmal degeneration that can lead to rupture<sup>3</sup> or acute limb ischemia caused by thromboembolization or intermittent claudication as a consequence of atherosclerotic degeneration. Consequently the diagnosis of PSA in young people and its coexistence with venous abnormalities are extremely rare. Currently, this vascular abnormality can be detected using diagnostic imaging techniques like duplex scanning, MRA and contrast-enhanced CT.

Treatment of PSA is individualized depending on the type (complete or incomplete), symptoms, specific anatomical features, and degree of perfusion of the lower extremity and includes interposition graft replacement, bypass grafting,<sup>4</sup> ligation, and endovascular techniques (embolization, angioplasty, etc).<sup>5</sup>

In the case here reported the presence of a PSA was not initially suspected but imaging techniques allowed detection and successful outcome. Although small residual varicose veins persist in the extremity, surgical treatment will depend on symptoms and course.

Although PSA is usually diagnosed in elderly patients, we should consider its presence in younger people, particularly in association with other vascular pathologies of lower extremities. Diagnostic imaging is decisive in detecting this uncommon anatomical abnormality.

## Conflict of Interest/Funding

None.

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